SWIM Flight and Flow Related Applications

Status and Plans

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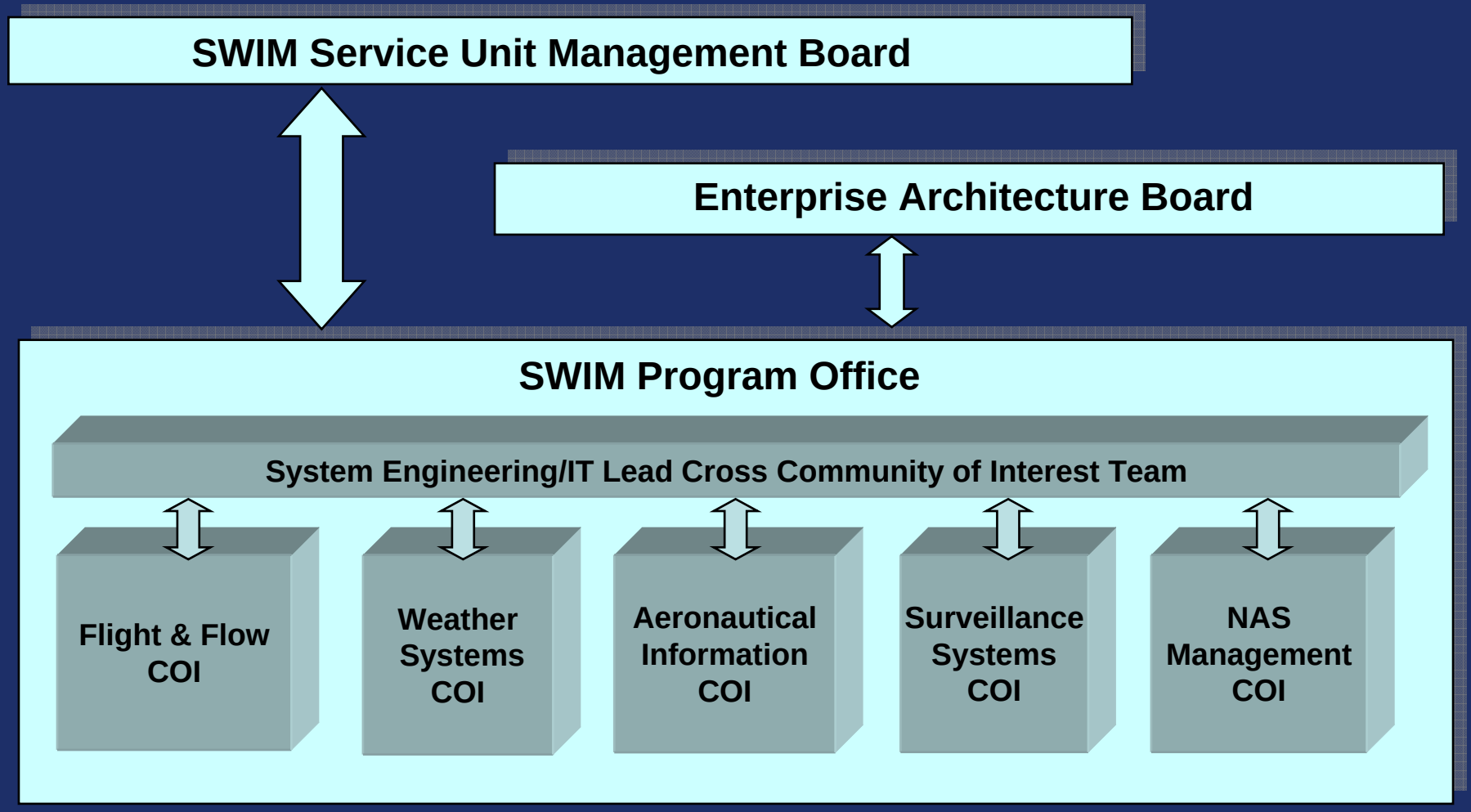
SWIM Program Relationships



Community of Interest

- **SWIM approach is following DoD approach, in which a Community of Interest (COI) is defined as:**

  "…a collaborative group of users who must exchange information in pursuit of their shared goals, interest, missions, or business processes and who therefore must have a shared vocabulary for making information visible, accessible, understandable…"

  [DoD COI Memo "DoD Net-Centric Data Strategy", May 9, 2003]

- **COI must stay focused; scope of a COI should be:**

  "…as narrow as reasonable given their mission"

  [DoD 8320.02-G "Guidance for Net-Centric Information Sharing", April 12, 2006, ASD for Networks and Information Integration / DoD COI]

- **SWIM COI recognizes potential for future users, therefore strives to make data visible, accessible, and understandable to those inside and outside their community**

Extract from MITRE/CAASD SWIM Briefing

Flight and Flow Community of Interest

- Flight and Flow Community of Interest established February 2006 consisting of representatives from:
  - ATO-E En Route and Oceanic
    - En Route Automation Modernization (ERAM)
    - Traffic Management Advisor (TMA)
    - En Route Information Display (ERIDS)
    - Dynamic Oceanic Tracking System (DOTS)
    - Advanced Technologies and Oceanic Procedures (ATOP)
  - ATO-T Terminal Systems
    - Standard Terminal Automated Radar System (STARS)
    - Automated Radar Terminal System (ARTS)
    - Terminal Data Link System (TDLS)/Pre-Departure Clearance (PDC)
    - Electronic Flight Strip Terminal System (EFSTS)
    - Flight Data Input/Output (FDIO)
  - ATO-R Traffic Flow Management
    - Traffic Flow Management System (TFMS)
    - Departure Spacing Program (DSP)

ATM Automation Interface Challenges

- **Support to NextGen capabilities**
  - Extending flight and flow data processing across systems and domains (e.g. Trajectory Based Operations)
- **Need to upgrade legacy interfaces**
  - End of Life/End of Service
- **Need for simultaneous upgrade of both sides of the interface**

SWIM Flight and Flow Segment 1 Capabilities

- Flight Planning
- Flight Data Distribution and Modification
- Execution of Flow Strategies/Reroutes
- Constraint Exchange
- Departure Flow Management

SWIM Segment 1 Interfaces and Threads

En Route and TFM

- Replace Common Message Set (CMS)/Host ATM Data Distribution System (HADDS)
- Support execution of flow strategies/reroutes/amendments
- Bidirectional constraint exchange

Terminal and TFM

- Airport and surface data exchange supports
  - Better departure prediction
  - Airport capacity determination

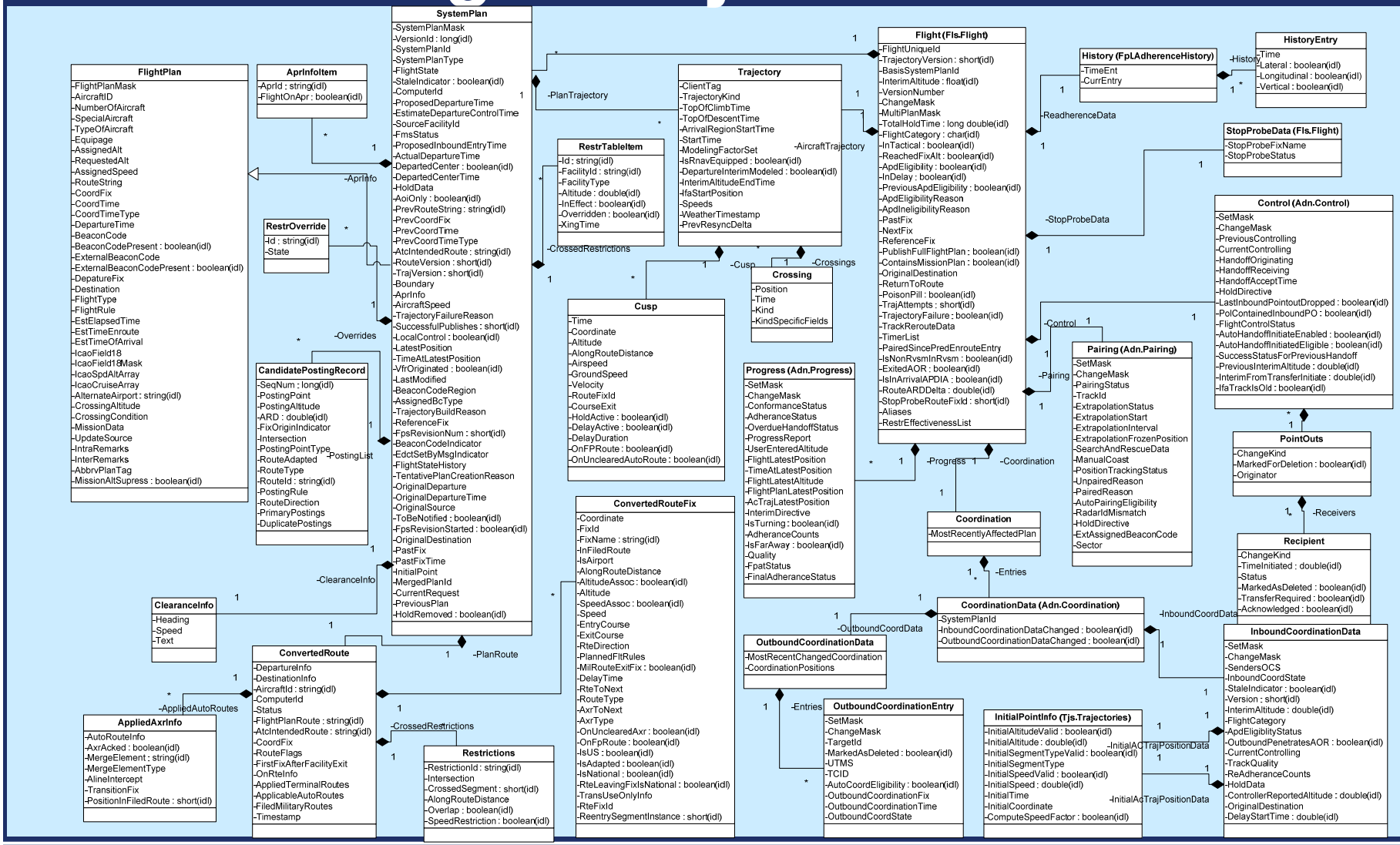
En Route and External Users

- Support to existing Common Message Set/ HADDS External Users

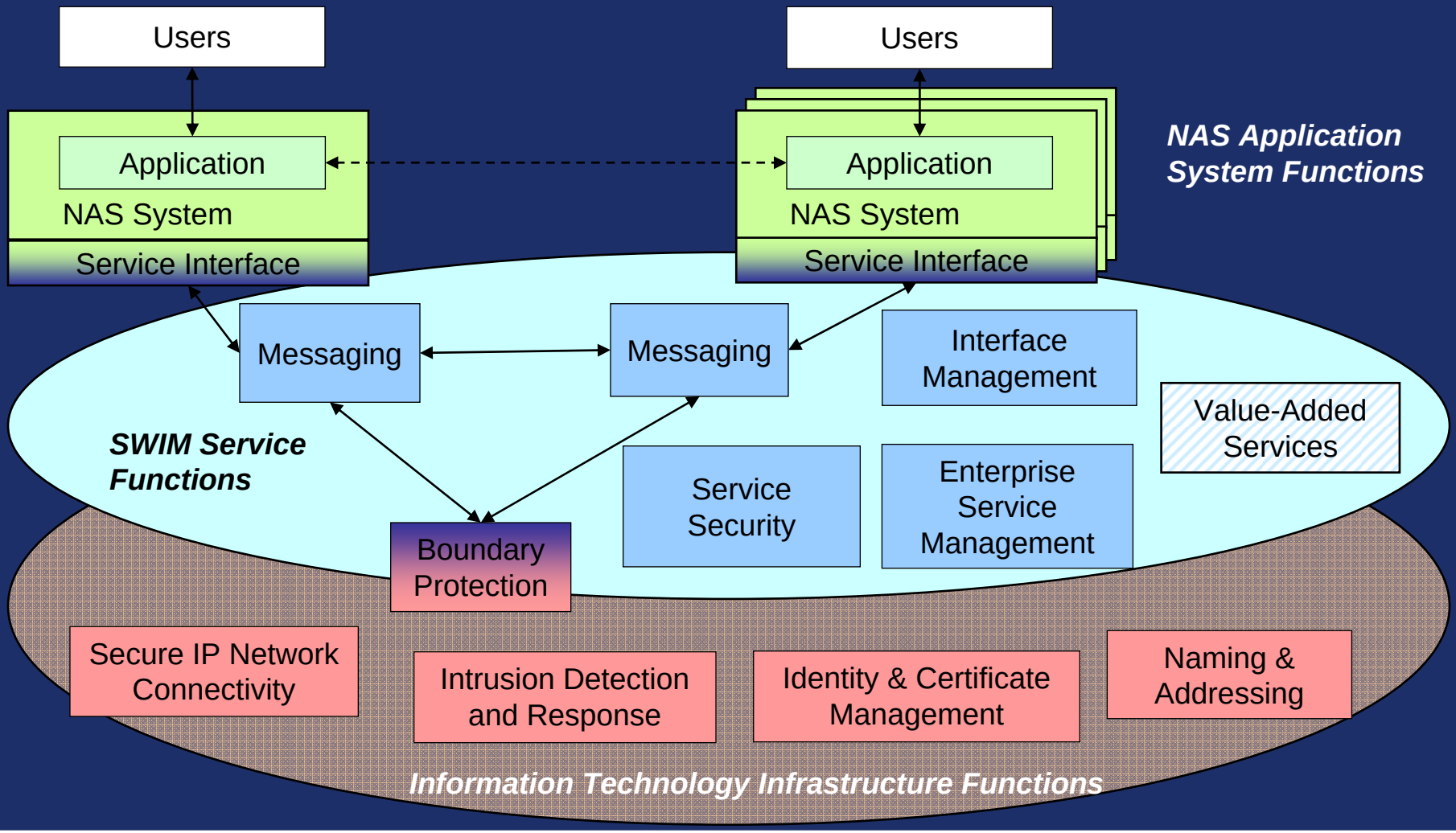
En Route and Terminal

- Flight Data Input/Output
  - Legacy En Route flight data interface to 600+ Tower/TRACON locations
  - Drives Flight Strip printing and flight data inputs from Terminal including amendments
- Terminal Data Distribution System (TDDS)
  - New interfaces to TDLS, EFS
  - Comm hub for Terminal data (e.g. ASDE, RVR, etc)
- Enables extension of flight data distribution to other terminal systems (e.g. ARTS/STARS)
- Flight Object versus limited Flight Strip data

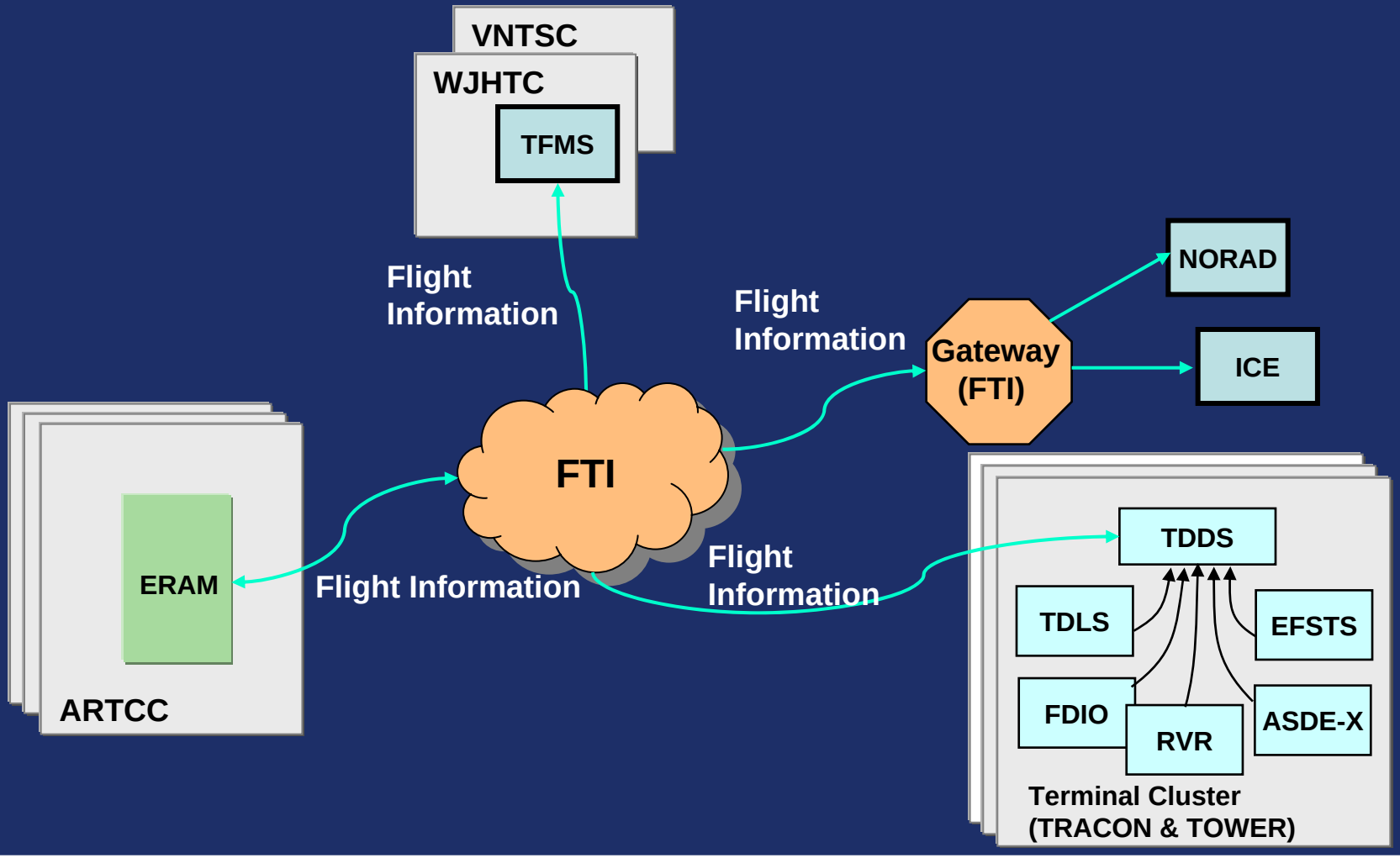
ERAM Flight Object Data Model



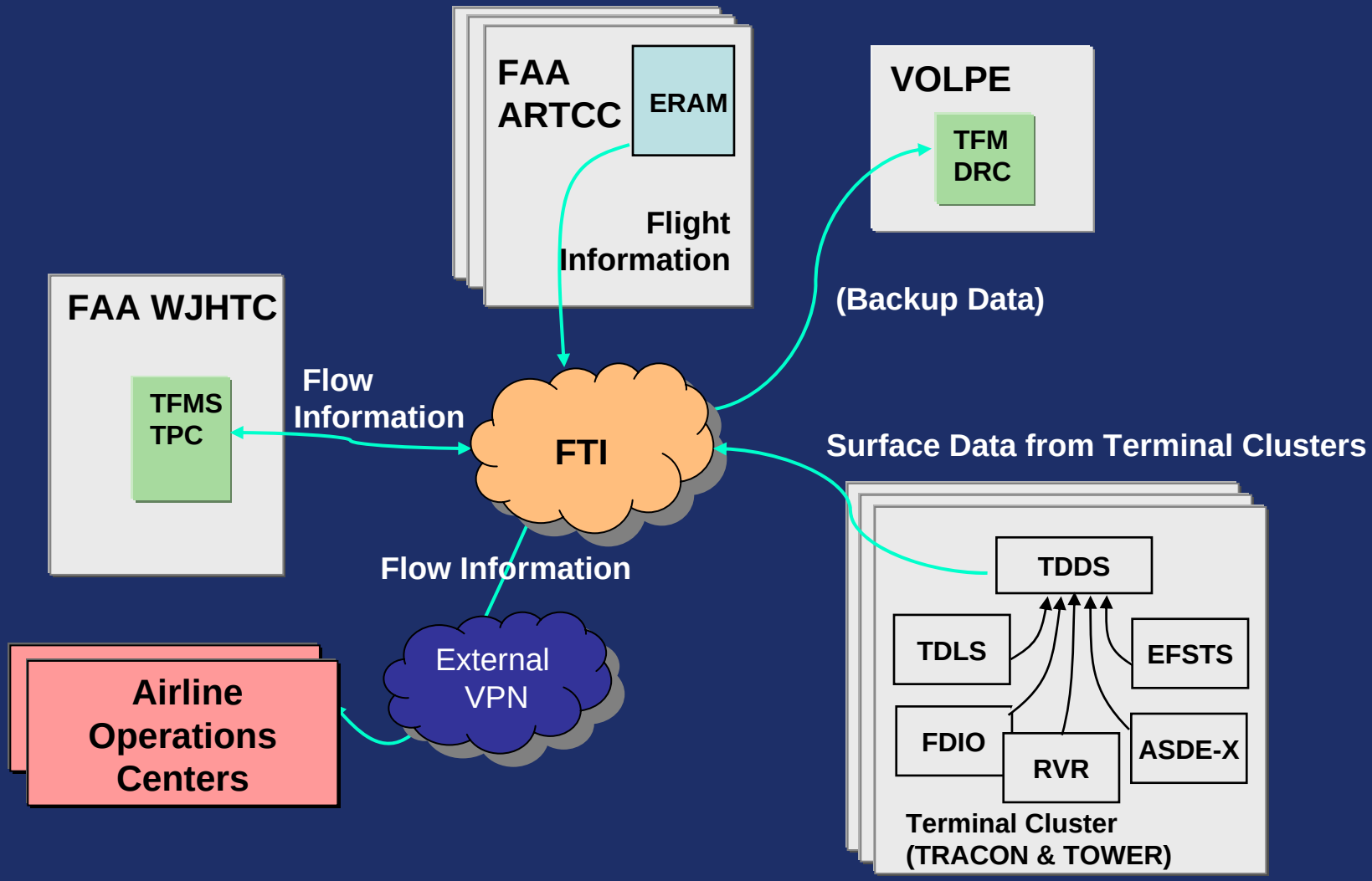
SWIM Functional Architecture



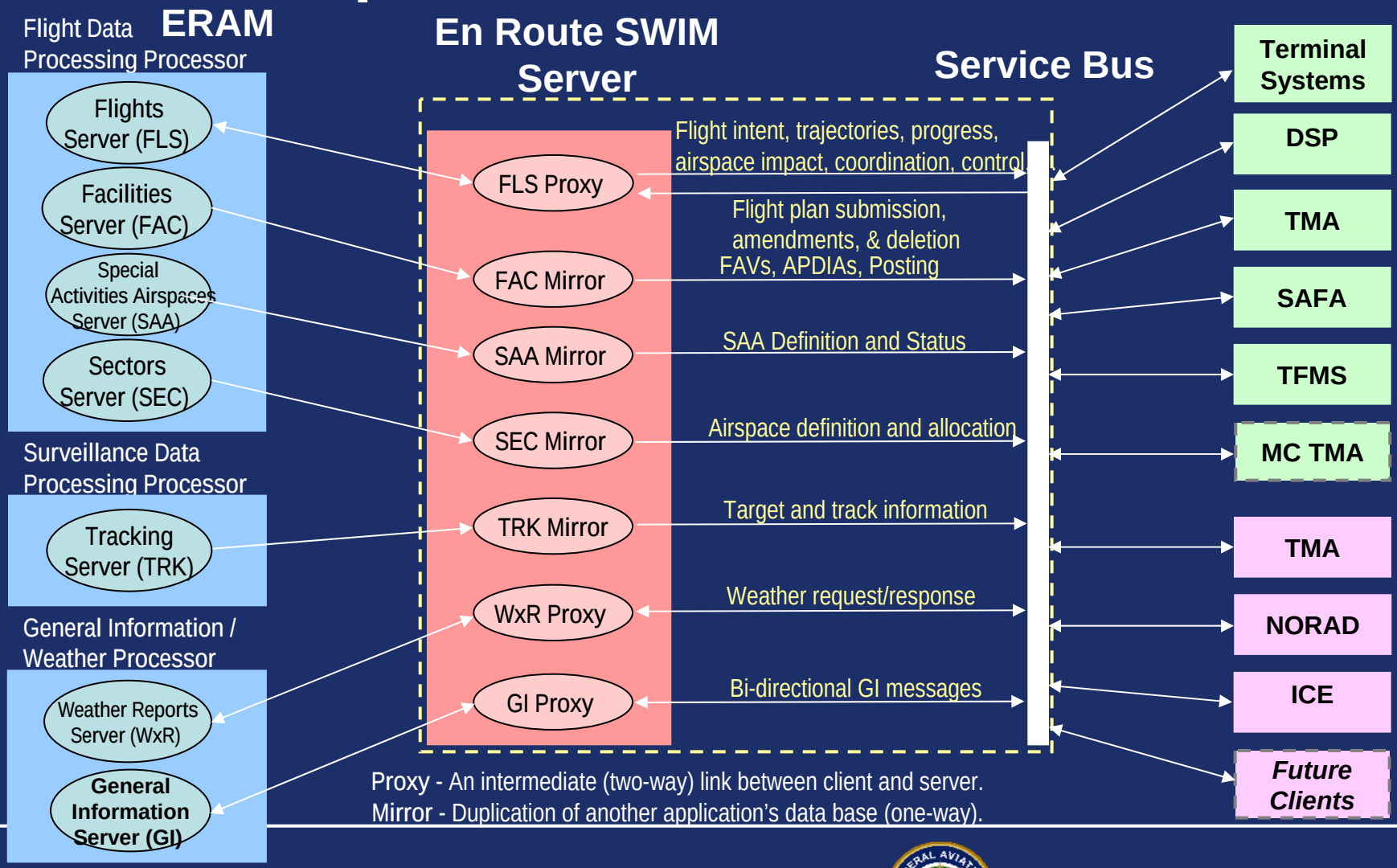
En Route and Terminal Information Data Flows



TFMS and Terminal



Notional ERAM SWIM Server for FDIO and HADDS Replacement



Candidates for Segment 2

- **Additional Flow and Constraint data**
  - TMA Metering Data
- **Cross-Domain ATC Automation Flight Object**
  - ERAM-to-ARTS/STARS Interface for TRACON flight data applications
- **Runway/Airport Configuration Status**
- **Information Display System Data**
- **Radar Data over IP with time stamp**
  - Support multi-sensor tracking, higher RSP

What's Next/Conclusions

- Awaiting SWIM JRC decision (June)
- Cross Domain coordination to develop the next level of detail
- Schedule synchronization across all domains